

**$\beta$ -mangostin suppresses LA-7 cells proliferation in vitro and in vivo: involvement of antioxidant enzyme modulation; suppression of matrix metalloproteinase and  $\alpha 6\beta 4$  integrin signalling pathways**

ABSTRACT

$\beta$ -mangostin ( M) was isolated from *Cratoxylum arborescens* to investigate anti-breast cancer effect in vitro and in vivo. M exhibited an inhibitory effect on the growth of LA-7 cells in vitro with apoptosis formation. In the animal model, M treatment was found to be effective in improving the tissue antioxidant enzymes such as superoxide dismutase and catalase activity ( $P < 0.05$ ). M treatment clearly exhibited apoptosis in mammary tumour tissues, and it was associated with regulation of PCNA and p53. The cDNA microarray gene expression followed by qRT-PCR based validation demonstrated that M could mediate tumour reduction and prevent metastasis by reduction of MMP-9, MMP-13, and MMP-27. Moreover, the reduction of both 14-3-3 and ITGB4 genes indicated the involvement of  $\alpha 6\beta 4$  integrin signalling pathway. These findings showed that  $\beta$ -mangostin is a promising compound candidate as an anti-tumour agent against breast cancer.

**Keyword:**  $\beta$ -mangostin; Breast cancer; MMP;  $\alpha 6\beta 4$  integrin; Apoptosis; Tamoxifen